

## **REMARKS**

In this Amendment, Applicants have cancelled claims 1-2 and 4-7 from further consideration in this application. Applicants are not conceding that the subject matter encompassed by claims 51-2 and 4-7, prior to this Amendment is not patentable over the art cited by the Examiner. Claims 1-2 and 4-7 were cancelled in this Amendment solely to facilitate expeditious prosecution of clearly allowable subject matter. Applicants respectfully reserve the right to pursue claims, including the subject matter encompassed by the amended and cancelled claims, as presented prior to this Amendment and additional claims in one or more continuing applications. It should further be noted that dependent claims 11-14 and 26 are amended herein so as to delete the redundant phrase of “all the limitations of which are incorporated herein by reference”. No other amendments have been made.

Consequently, claims 8, 11-14, 21, and 26 are all the claims pending in the application. Claims 8, 11-14, 21, and 26 stand rejected on prior art grounds. Claims 21 and 26 stand rejected upon informalities. Applicants respectfully traverse these rejections based on the following discussion.

### **I. The 35 U.S.C. §112, First Paragraph, Rejection**

Claims 21 and 26 stand rejected under 35 U.S.C. §112, first paragraph, as failing to comply with the written description requirement. Specifically, the Office Action indicates that the application does not support that the disposable liner is both perforated and finned based on

applicant's specification and figures. These rejections are traversed as explained below.

The Applicants submit that there is adequate support in the specification for the position that the disposable liner is both perforated and finned. Paragraph [0017] provides that "The semi-permeable material 20, 30 can be a permanent part of the shield 12 or a disposable material designed to be periodically removed from the shield and replaced." Paragraph [0017] further provides that the "The semi-permeable material 12 [which can be a disposable material] comprises an absorptive material, a screen material, a perforated material, a finned material, etc."

The use of etc. at the end of the list means that the list is not all encompassing and may include other materials in the same class (e.g., see definition of etcetera in *The American Heritage® Dictionary of the English Language, Fourth Edition Copyright © 2006 by Houghton Mifflin Company. Published by Houghton Mifflin Company. All rights reserved.*) Furthermore, since no conjunctions (e.g., "and" or "or") are set out within the listing of potential materials, the list is not limited by any such conjunctions. For example, because the materials listed are not connected by the word "and", the semi-permeable material 12 is not limited to comprising all of the materials in the list. Similarly, because the materials listed are not connected by the word "or", the semi-permeable material 12 is not limited to comprising only one of the materials in the list. Consequently, the Applicants submit that the specification does disclose that the semi-permeable material can be disposable and can comprise a combination of any or all of the materials listed in paragraph [0017]. In view of the foregoing, the Examiner is respectfully requested to reconsider and withdraw the rejections.

## II. The Prior Art Rejections

Claims 8, 11-14, 21, and 26 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Yang, et al. (U.S. Patent No. 5,868,843), hereinafter referred to as Yang, in view of Mahvan, et al. (U.S. Patent No. 5,614,071), hereinafter referred to as Mahvan. Claim 21 further stands rejected under 35 U.S.C. §103(a) as being unpatentable over Yang, in view of Mahvan, and as evidenced by Dictionary.com, hereinafter referred to as Dictionary. Applicants respectfully traverse these rejections based on the following discussion.

### A. Rejection Of Independent Claim 8 Based On Yang And Mahvan.

The Applicants further submit that the cited prior art references alone or in combination do not teach or suggest the following features in independent claim 8: (1) “wherein said surface further comprises absorptive fins that provide air and fluid flow control such that said surface of said shield further prevents said cleaning fluid and said foreign matter particles from forming into a mist within said cleaning apparatus and being re-deposited back on said semiconductor wafer.”

In rejecting independent claim 8, the Office Action, referring to Yang, provides as follows:

“Additionally '843 teaches that the semi-permeable material prevents fluid ejected from the surface of the rotating substrate from forming into a mist and being redeposited back on said substrate (col. 3 lines 1-8). '843 does teach the surface of said shield facing said semiconductor wafer comprises semi-permeable material (or sponge) having absorptive fins (projections or corrugations) (col. 2 lines 63-65). The sponge will inherently collect said fluid and prevents splashing by trapping the particles (col. 3 lines 1-10) '843 does not teach that the shield surrounds the substrate. '843 teaches a vertically orientated fin ('843 col. 2 lines 63-65) as previously discussed. One of ordinary skill in the art knows that a

fin (or baffle) and a sponge inherently controls fluid flow. Using the known technique of controlling fluid and air flow with the absorptive fins (or baffles) as taught by '843 would have been obvious to one of ordinary skill in the art. It has been held that the recitation that an element is "adapted to" perform a function is not a positive limitation but only requires the ability to so perform. It does not constitute a limitation in any patentable sense. *In re Hutchison*, 69 USPQ 138. At the time of the invention one of ordinary skill in the art would have known that the fluid dispensed on said substrate would splash and bounce back onto the substrate ('843 col. 2 lines 18- 22) and the particles that bounce back are undesirable."

The Applicants respectfully disagree.

More particularly, Yang teaches a detachable sponge device composed of a curved mounting piece and a corrugated piece of sponge attached to the mounting piece to absorb splattered solvent jetted at the wafer's edge from bouncing back onto the wafer surface (see Abstract). The present invention identified a problem associated conventional clean stations used to clean the entire surface of the substrate and this problems goes beyond just backsplash to mist formation. That is, in the present invention "a surface of said shield facing said semiconductor wafer comprises a semi-permeable absorptive material that collects said cleaning fluid and said foreign matter particles to prevent splashing", as in Yang, and further comprises "absorptive fins that provide air and fluid flow control such that said surface of said shield further prevents said cleaning fluid and said foreign matter particles from forming into a mist within said cleaning apparatus and being re-deposited back on said semiconductor wafer."

Col. 2, lines 63-65, of Yang disclose "a corrugated piece of absorbent material 31, such as sponge, attached on the curved inner side of the mounting piece 32. The corrugated piece of sponge 31 is substantially equal in length to the mounting piece..." Yang does not explicitly disclose fins or even projections, as indicated in the Office Action.

The Applicants submit that the corrugated shield feature of Yang does not amount to the same thing as the “absorptive fins” on the shield of the present invention. Specifically, col. 3, lines 1-8, of Yang discloses that the purpose of this sponge is to “absorb and act as a buffer to any oversprayed particles of the solvent from the wafer 22” and also that “the corrugated surface of the sponge acts as a trapping means to prevent the particles from being directly bounced back therefrom.” No other function for the “corrugated surface” is disclosed. More specifically, the Applicants submit that nothing in the text or illustrations of Yang would teach or suggest that the shield of Yang was structured in such a way that, in addition to trapping particles, it provided both the air and fluid flow control necessary to prevent the cleaning fluid and the foreign matter particles from forming into a mist within the cleaning apparatus.

Furthermore, the Applicants submit that the disclosed “corrugated” surface on the shield of Yang alone would not be sufficient to provide both the fluid and air flow control (as provided by the fins of the present invention) “such that said surface of said shield further prevents said cleaning fluid and said foreign matter particles from forming into a mist within said cleaning apparatus and being re-deposited back on said semiconductor wafer.” Specifically, the term “corrugated” is generally understood to mean shaped into parallel folds or grooves (e.g., see Dictionary.com Unabridged (v 1.1) Based on the Random House Unabridged Dictionary, © Random House, Inc. 2006.) and the material 31 of Yang is illustrated in Figure 2 as having such parallel grooves. In the context of the present invention, the term “fins” should be understood by one skilled in the art, based on the text and illustrations, to mean “something resembling a fin in shape or function, as: ... A projecting vane used for cooling, as on a radiator or an engine cylinder” (see, for example, The American Heritage® Dictionary of the English Language,

Fourth Edition. Houghton Mifflin Company, 2004. 10 Sep. 2008, which further defines “vane” as “Any of several usually relatively thin, rigid, flat, or sometimes curved surfaces radially mounted along an axis, as a blade in a turbine or a sail on a windmill, that is turned by or used to turn a fluid.”). It is these fin-shaped structures (i.e., vane or blade structures) that provide the fluid and air flow control necessary to prevent the cleaning fluid and the foreign matter particles from forming into a mist within the cleaning apparatus and being re-deposited back on said semiconductor wafer. One skilled in the art would recognize that a corrugated (i.e., grooved) surface such as that disclosed in Yang would provide surface area to trap splashed particles in order to prevent the particles from being directly bounced back onto the wafer, but that such corrugations or grooves would not be suitable, nor are they disclosed as being suitable, for fluid and air flow control that would prevent the claimed mist formation.

In response to this argument that the corrugated material of Yang does not equate the finned material of the present invention (as previously presented), the Office Action (at paragraph 3.d) reiterated the position that the corrugations of Yang amounted to fins and (at paragraph 3.f.) further provided “By Applicants definitions the term corrugated states that a corrugated material has grooves and implicitly states that there are ridges. Applicant then states that the term “fin” is a fixed structure projecting outward” (i.e., has ridges and grooves), thus the two materials are equivalent according to the claims and the applicant’s definitions.” The Applicants respectfully disagree. The fact that the Applicants have indicated that, by definition, a corrugated material has grooves does not in any way imply that this material also has ridges. Furthermore, the fact that the Applicants have indicated that fins are generally understood to mean projections that resemble fins and have referred the Examiner to the illustration of Figure 3

which shows fins 30 as fixed structures projecting outward similarly does not in any way imply that the fins have ridges and grooves or that the corrugated material of Yang is equivalent to the finned material of the present invention.

Also in response to the argument that the corrugated material of Yang does not equate the finned material of the present invention, the Office Action (at paragraph 3.d.) further cited Mahvan as “teaching shields (Fig. 1 item 26, 28 and 30) that surrounds the substrate in order to capture sputtered materials (reads on mist) and prevent it from being deposited on the substrate (col. 2, lines 60-65). The Applicants respectfully disagree. Mahvan teaches a shield for use in a sputtering system that deposits ejected atoms of a material, such as carbon, onto a fixed substrate. During a wide-angle sputtering deposition process (e.g., a carbon deposition process), over-sprayed atoms (i.e., atoms that miss the target) are deposited onto the shield (see col. 1, lines 30-38). In other words the shield of Mahvan does not capture spray that splashes off a rotating target, as in Yang or in the present invention, rather it simply captures deposited material that misses the target. Furthermore, the shield structure of Mahvan is specifically designed with cavities (illustrated as indentions) to hold the deposited material in a way that minimizes flaking due to shield buckling. The cited portion of Mahvan (i.e., col. 2, lines 60-65) refers to the sputtering gun used for the deposition process and the shield members. Those skilled in the art will recognize that “sputtering” is a process by which atoms are thinly deposited on a surface. Nothing in the cited portion of Mahvan or anywhere else in Mahvan “reads on mist”, much less discloses a shield surface structure (e.g., like the fins of the present invention) that would provide for both fluid and air flow control that would prevent cleaning fluid and foreign matter particles from forming into a mist and being re-deposited back on the semiconductor wafer.

Therefore, independent claim 8 is patentable over the cited prior art references. Further, dependent claims 11-14 are similarly patentable, not only by virtue of their dependency from a patentable independent claim, but also by virtue of the additional features of the invention they define. Moreover, the Applicants note that all claims are properly supported in the specification and accompanying drawings, and no new matter is being added. In view of the foregoing, the Examiner is respectfully requested to reconsider and withdraw the rejections.

B. Rejection Of Independent Claim 21 Based On Yang, Mahvan And Dictionary.com.

For the same reasons as set out above in response to the rejection of independent claim 8, the Applicants submit that the cited prior art references do not teach or suggest the feature in independent claim 21 of “wherein said disposable liner further comprises absorptive fins that provide air and fluid flow control such that said disposable liner further prevents said fluid and said foreign matter particles from forming into a mist within said apparatus and being re-deposited back on said substrate”. The Applicants further submit that the cited prior art references also do not teach or suggest the following additional feature in independent claim 21: “wherein said disposable liner comprises a perforated material having perforations facing said substrate, said perforated material with said perforations collects said fluid and said foreign matter particles to prevent splashing”.

In rejecting claim 21, the Office Action, referring to Yang, provides:

“Additionally '843 teaches said semi-permeable material made of a sponge material (a protective covering that serves to conceal and is perforated where perforated is defined as pierced with a hole or holes as evidenced by Dictionary.com) and faces said substrate (col. 2 lines 63- 65, Fig. 3). '843 does teach the surface of said shield facing said semiconductor wafer comprises semi-permeable material (or sponge) having absorptive fins (projections or corrugations) (col. 2 lines 63-65).”



The Applicants respectfully disagree.

Independent claim 21 includes the additional limitations of a disposable liner comprises a perforated material having perforations facing the substrate. Specifically, as described in paragraphs [0016]-[0017] of the specification, the present invention comprises a shield and the surface of the shield can comprise a permanent or disposable semi-permeable material, which in turn can comprise, for example, an absorptive material, a screen material, a perforated material etc. Figure 2 illustrates such perforations. Neither Yang nor Mahvan teach such a perforated material lining the shield with perforations actually facing the substrate. Perforations are generally understood to mean holes punched or bored through something (see The American Heritage® Dictionary of the English Language, Fourth Edition Copyright © 2006 by Houghton Mifflin Company. Published by Houghton Mifflin Company. All rights reserved.) Again, Yang teaches an absorbent material or sponge, not a material with perforations (i.e., not a material with holes punched or bored through it). Similarly, Mahvan teaches an array of cavities (illustrated as indentions) on a wall surface, not a material with perforations (i.e., not a material with holes punched or bored through it).

Therefore, independent claim 21 is patentable over the cited prior art references. Further, dependent claim 26 is similarly patentable, not only by virtue of their dependency from a patentable independent claim, but also by virtue of the additional features of the invention they define. Moreover, the Applicants note that all claims are properly supported in the specification and accompanying drawings, and no new matter is being added. In view of the foregoing, the Examiner is respectfully requested to reconsider and withdraw the rejections.

### **III. Formal Matters and Conclusion**

With respect to the rejections to the claims, the claims have been amended, above, to overcome these rejections. In view of the foregoing, Applicants submit that claims 8, 11-14, 21, and 26, all the claims presently pending in the application, are patentably distinct from the prior art of record and are in condition for allowance. Therefore, the Examiner is respectfully requested to reconsider and withdraw the rejections to the claims and further to pass the above application to issue at the earliest possible time.

Should the Examiner find the application to be other than in condition for allowance, the Examiner is requested to contact the undersigned at the local telephone number listed below to discuss any other changes deemed necessary. Please charge any deficiencies and credit any overpayments to Attorney's Deposit Account Number 09-0456.

Respectfully submitted,

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